

IN THE CLAIMS:

Claim 1 (currently amended): A single cell of a flat plate type solid oxide fuel cell, comprising:

a first electrode member consisting of a first porous substrate having only a plurality of minute holes arranged randomly therein through which all of a fuel gas or air can pass directly to the first electrode member and wherein the porous substrate is the only gas flow path in the first electrode member, said porous substrate having a sufficient gas flow property;

an a solid electrolyte film formed on either a front surface or a back surface of said first electrode member;

a second electrode layer formed on said solid electrolyte film;

a separator film formed on the other surface of said first electrode member;

said first electrode member being one of a fuel electrode and an air electrode and said second electrode layer being the other one of said fuel electrode and said air electrode; and

a seal portion for covering all side surfaces of said first electrode member, said seal portion being scraped off from two opposing areas of two of said side surfaces to define an inlet and an outlet opening for one of a fuel gas and air supplied to the cell, said plurality of minute holes arranging for a flow of said fuel gas or air toward said outlet opening from said inlet, and for a flow of said fuel gas or air in a vertical direction and in a horizontal direction locally,

wherein the entire first electrode member forms one of a fuel flow path and an air flow path through the cell with no through-passages.

Claim 2 (currently amended): A single cell of a flat plate type solid oxide fuel cell according to claim 1, wherein at least one of a part of said solid electrolyte film and a part of said separator film comprises said seal portion and forms a gas seal film.

Claim 3 (previously presented): A single cell of a flat plate type solid oxide fuel cell according to claim 2, wherein said seal portion includes a side film portion which covers each entire area of side surfaces of one of two pairs of opposed side surfaces of said first electrode member and seals said covered side surfaces to prevent said fuel gas or air from escaping.

Claim 4 (currently amended): A single cell of a flat plate type solid oxide fuel cell according to claim 1, wherein at least one of said solid electrolyte film and said separator film is formed by a wet process relative to said first electrode member.

Claim 5 (previously presented): A cell stack of a flat plate type solid oxide fuel cell, comprising:

a plurality of single cells according to claim 1 arranged in series in a lamination direction to form a laminated body; and
a conductive spacer provided between adjacent cells.

Claim 6 (original): A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein said spacer is a porous substrate.

Claim 7 (previously presented): A cell stack of a flat plate type solid oxide fuel cell

according to claim 6, wherein said porous substrate consists of a material which is the same as that of said second electrode layer.

Claim 8 (original): A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein a conductive jointing material is provided between said spacer and said separator film opposed to each other in said single cells which are adjacent to each other.

Claim 9 (original): A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein manifold plates formed of ceramics are attached on side surfaces of said laminated body.

Claim 10 (original): A cell stack of a flat plate type solid oxide fuel cell according to claim 9, wherein said ceramics is free-cutting glass ceramics.

Claim 11 (previously presented): A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein the lamination direction of said laminated body is set horizontal, and said first electrode layer and said spacer are orthogonally arranged.

Claim 12 (currently amended): A single cell of a flat plate type solid oxide fuel cell comprising:

a first electrode member consisting of a porous substrate having only a plurality of minute holes arranged randomly therein through which all of a fuel gas or air passes, and having two pairs of opposite side surfaces and wherein all of the fuel gas or air can pass directly to the first electrode member and wherein the porous substance is the only gas

flow path in the first electrode member, said porous substrate having a sufficient gas flow property;

an a solid electrolyte film formed on either a front surface or a back surface of said first electrode member;

a second electrode layer formed on said solid electrolyte film; and

a separator film formed on the other surface of said first electrode member, wherein said first electrode member is one of a fuel electrode and an air electrode, and said second electrode layer is the other one of said fuel electrode and said air electrode, and an entire cross section of one pair of said opposite side surfaces of said first electrode member being a gas flow opening and path, with no through-passages,

wherein both front and back surfaces of said first electrode member being covered with said solid electrolyte film and said separator film respectively,

wherein at least one of a part of said solid electrolyte film and a part of and said separator film being a seal portion which covers a part of side surfaces between said solid electrolyte film and said separator film of said first electrode member and forms a gas seal film, and wherein said seal portion including a side film portion which covers each entire area of the other pair of said side surfaces of said first electrode member and seals said covered side surfaces to prevent said fuel gas or air from escaping, the plurality of minute holes arranging for a flow of said fuel gas or air between the one pair of said opposite side surface of said first electrode member, and for a flow of said fuel gas or air in a vertical direction and in a horizontal direction locally.

Claim 13-14 (canceled).

Claim 15 (previously presented): A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein said air flow path and said fuel flow path are parallel with respect to one another.

Claim 16 (previously presented): A cell stack of a flat plate type solid oxide fuel cell according to claim 15, wherein said air and fuel flow paths are arranged in a co-current or counter-current flow relationship.

Claim 17 (previously presented): A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein said air flow path and said fuel flow path are orthogonal with respect to one another.

Claim 18 (previously presented): A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein manifold plates formed of ceramics are attached on side surfaces of said laminated body, said manifold plates comprising first openings corresponding to one of said air flow path and said fuel flow path and second openings corresponding to the other one of said air flow path and said fuel flow path.

Claim 19 (previously presented): A single cell of a flat plate type solid oxide fuel cell according to claim 1, wherein an entire cross section of the cell extending between the inlet and the outlet forms one of the fuel flow path and the air flow path.